IOWA DEPARTMENT OF NATURAL RESOURCES

UNDERGROUND STORAGE TANK SECTION

INSTALLER/INSTALLATION INSPECTOR CHECKLIST
FOR INSTALLATION, REPLACEMENT, UPGRADE, RETROFIT, REPAIR

The Iowa DNR Underground Storage Tank (UST) program requires this form to be signed and submitted to the DNR by the UST Licensed Professional after completing an installation inspection, a replacement, repair, retrofit or upgrade to an UST system. If an installation inspection is conducted, this form is completed by the installation inspector and is due 14 days after the final inspection. If an installation inspection is not required, the UST licensed professional completes and signs this form, attaches it to the 148 form along with manufacturer's checklists (if appropriate) and sends all forms to the DNR UST Section. The form is used for compliance with Technical Standards and Corrective Action for Owners and Operators of Underground Storage Tanks [567--135 IAC].

Facility ID ***(not available if new facility)*****:**

Facility Name:

Facility Street Address:

Facility City, State and Zip:

Facility County:

Owner of Facility:

Owner Street Address:

Owner City, State and Zip:

Owner Phone:

Facility Contact Person: **Contact Phone:**

Your Name:

I am an Iowa Licensed ***(check all that apply)*****:**

☐ **Installer** ☐ **Installation Inspector** ☐ **Tank and/or Piping Tester** ☐ **Tank Liner**

Cathodic Protection: ☐ **Tester** ☐ **Technician** ☐ **Technologist** ☐ **Specialist**

NACE Certification #:

Iowa License #:

Expiration Date:

Company Name:

Company Street Address:

Company City, State and Zip:

Company Phone:

E-mail:

CHECK ALL THAT APPLY:

New UST installation (at a new facility)	☐	Number of USTs:	
Tank replacement/addition (at existing facility)	☐	Number of USTs:	
Piping replacement (10 feet of piping or within 10 feet of a dispenser, secondary containment and double walled piping required). Secondary containment and double walled piping installed? ☐			☐
Dispenser replacement (secondary containment required if piping replaced below the shear valve or check valve or if piping replaced within ten feet of dispenser) Dispenser pan installed? ☐			☐
Tank top containment sump (submersible turbine) New Install ☐ Replacement ☐			☐
ATG system: Installation ☐ Replacement ☐			☐
Impressed current cathodic protection system install: New Install ☐ Repair ☐			☐
Replacement anodes install			☐
Lining: Installation ☐ or Repair ☐			☐
Spill protection equipment replacement			☐
Overfill prevention equipment replacement (Warning: do not install vent restriction devices on suction systems, systems with Stage 1 vapor recovery, remote-filled tanks, emergency generator or heating oil tanks):			☐
UST system repair *(summarize work to be done)*:			☐

FIRST INSPECTION

PRIOR TO PLACEMENT OF THE UST INTO THE EXCAVATION	YES	NO	UNKNOWN	N/A
The UST installer is licensed by the IDNR?	☐	☐	☐	☐
1. The UST installer submitted the IDNR Notification of Installation form prior to installation?	☐	☐	☐	☐
2. Was hydrocarbon contamination observed in the excavation? If so was it reported to IDNR?	☐ ☐	☐ ☐	☐ ☐	☐ ☐
3. Surface depth to groundwater	_____ Ft.		☐	
4. Tank and piping materials meet current and acceptable standards and comply with 567—Chapter 135?	☐	☐	☐	☐
5. Manufacturer's specifications for pre-installation followed?	☐	☐	☐	☐
6. Visual damage inspection conducted for tanks and piping?	☐	☐	☐	☐
7. If damage(s) discovered--repaired per manufacturer's instruction?	☐	☐	☐	☐
8. Pressure test conducted on tank according to PEI RP 100-05 or API 1615? All surfaces, seams and fittings soaped and inspected?	☐ ☐	☐ ☐	☐ ☐	☐ ☐
9. Interstitial test conducted and passed? a. Liquid filled (tested per manufacturer's instructions)? b. Vacuum (tested per manufacturer's instructions)?	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐
10. Tank excavation complies with API 1615 or PEI 100-2005?	☐	☐	☐	☐
11. Tank Manufacturer / Model / UL				

Installation Inspector's Name (Print): 1st Inspection Date:

Installation Inspector's Signature:

SECOND INSPECTION	TANK #1			TANK #2			TANK #3		
AFTER PLACEMENT OF USTS AND PIPING, BUT PRIOR TO BACKFILLING	YES	NO	N/A	YES	NO	N/A	YES	NO	N/A
11. Tank placement conducted according to manufacturer's instructions?	☐	☐	☐	☐	☐	☐	☐	☐	☐
12. Was tank damaged prior to or during placement?	☐	☐	☐	☐	☐	☐	☐	☐	☐
13. Tank pit and piping trenches sufficiently wide and deep to accommodate backfill material and clearances according to PEI/RP 100-2005?	☐	☐	☐	☐	☐	☐	☐	☐	☐
14. Type of anchorage used for tanks:	☐ Slab at Grade			☐ Deadmen Anchors			☐ Bottom Hold-Down Pad		
15. Tanks are anchored according to manufacturer's standards or PEI or RP100-2000?	☐ YES			☐ NO			☐ N/A		

PIPING	TANK #1			TANK #2			TANK #3		
	YES	NO	N/A	YES	NO	N/A	YES	NO	N/A
16. All piping slopes back to the tank?	☐	☐	☐	☐	☐	☐	☐	☐	☐
17. Piping joints have been assembled according to the pipe and sealant manufacturer's preparation, application and assembly instructions?	☐	☐	☐	☐	☐	☐	☐	☐	☐
18. All piping installation requirements specified by the manufacturer have been followed and implemented?	☐	☐	☐	☐	☐	☐	☐	☐	☐
19. Soap and mirror test conducted on all assembled piping joints, connections and flex connectors under pressure?	☐	☐	☐	☐	☐	☐	☐	☐	☐
20. Were there any leaks/evidence of leaks in the assembled piping from the soap/mirror test?	☐	☐	☐	☐	☐	☐	☐	☐	☐
21. If primary or secondary piping was damaged or failed the pressure test, it was repaired according to manufacturer's instruction, retested and passed?	☐	☐	☐	☐	☐	☐	☐	☐	☐
22. Primary piping passes pressure testing?	☐	☐	☐	☐	☐	☐	☐	☐	☐
23. Secondary piping passes pressure testing?	☐	☐	☐	☐	☐	☐	☐	☐	☐
24. Sump penetrations are tight and sealed?	☐	☐	☐	☐	☐	☐	☐	☐	☐
25. Conduit junction boxes and penetrations into the sumps are tight and sealed?	☐	☐	☐	☐	☐	☐	☐	☐	☐
26. Sumps and UDCs hydrostatically tested and passed?	☐	☐	☐	☐	☐	☐	☐	☐	☐
27. Satellite-dispenser piping installed and monitored for leaks with a line leak detector?	☐	☐	☐	☐	☐	☐	☐	☐	☐
28. All flex connectors properly installed, i.e., not kinked, twisted or bent out of its plane or beyond manufacturer's specifications:	☐	☐	☐	☐	☐	☐	☐	☐	☐
SACRIFICIAL ANODE SYSTEMS	YES	NO	N/A	YES	NO	N/A	YES	NO	N/A
29. Did anodes, dielectric bushings, or coatings incur any damage during installation?	☐	☐	☐	☐	☐	☐	☐	☐	☐
30. Damages to anode connection, coatings or tanks have been repaired according to manufacturer instructions?	☐	☐	☐	☐	☐	☐	☐	☐	☐
31. Anodes prepared and installed according to manufacturer's instructions?	☐	☐	☐	☐	☐	☐	☐	☐	☐
32. Testing was conducted to ensure the structures are adequately protected by the sacrificial system.	☐	☐	☐	☐	☐	☐	☐	☐	☐
33. Structures passed NACE criterion?	☐	☐	☐	☐	☐	☐	☐	☐	☐
34. A cathodic protection test station was installed?	☐	☐	☐	☐	☐	☐	☐	☐	☐

Identify tank using tag number, capacity, and content:	Tag #:								
	Capacity:								
	Content:								
IMPRESSED CURRENT SYSTEMS		YES	NO	N/A	YES	NO	N/A	YES	NO	N/A
35. The impressed current cathodic protection system was designed by a corrosion expert?		☐	☐	☐	☐	☐	☐	☐	☐	☐
36. A pre-installation investigation was conducted (utilities contacted) to confirm there would be no interference from other DC sources.		YES ☐ NO ☐ N/A ☐								
37. Anodes were installed according to the manufacturer's instructions?		☐	☐	☐	☐	☐	☐	☐	☐	☐
38. The negative terminal on the rectifier has been connected to the structure, and the positive terminal to the anodes?		☐	☐	☐	☐	☐	☐	☐	☐	☐
39. All cathodically protected structures are electrically connected?		☐	☐	☐	☐	☐	☐	☐	☐	☐
40. Testing was conducted to ensure the cathodically protected structures are not shorted or connected to other unintended metallic structures?		☐	☐	☐	☐	☐	☐	☐	☐	☐
41. Impressed current system was tested and passed according to NACE standards and found to be providing adequate protection?		☐	☐	☐	☐	☐	☐	☐	☐	☐
42. Damage(s) to anode connections, coatings or tanks have been repaired according manufacturer's instructions?		☐	☐	☐	☐	☐	☐	☐	☐	☐
43. Any anode pre-packaging material has been removed, and the anodes placed in the proper backfill material?		☐	☐	☐	☐	☐	☐	☐	☐	☐
44. A cathodic protection test station was installed?		☐	☐	☐	☐	☐	☐	☐	☐	☐
45. A rectifier monitoring log has been prepared for the owner/operator.		☐	☐	☐	☐	☐	☐	☐	☐	☐

Installation Inspector's Name (Print): _____ **2nd Inspection Date:** _____

Installation Inspector's Signature: _____

THIRD INSPECTION	TANK #1			TANK #2			TANK #3		
AFTER BACKFILLING AND PRIOR TO OPERATION	YES	NO	N/A	YES	NO	N/A	YES	NO	N/A
46. Backfilling materials comply with manufacturer's recommendations?	☐	☐	☐	☐	☐	☐	☐	☐	☐
47. Backfilling materials compacted according to manufacturer's instructions?	☐	☐	☐	☐	☐	☐	☐	☐	☐
48. All UST system components are compatible with the product stored?	☐	☐	☐	☐	☐	☐	☐	☐	☐
49. Spill protection devices have been properly installed	☐	☐	☐	☐	☐	☐	☐	☐	☐
50. Adequate clearance has been provided between piping and trench walls, conduit, monitoring wells, utilities, nearby structures, and other system components following NFPA, API or PEI standards?	☐	☐	☐	☐	☐	☐	☐	☐	☐
51. Both overfill protection and leak detection monitoring system requirements of 567—135 have been met and are operating properly?	☐	☐	☐	☐	☐	☐	☐	☐	☐
52. Emergency shut-off valve with fusible is positioned and anchored according to manufacturer's specification?	☐	☐	☐	☐	☐	☐	☐	☐	☐
53. Emergency breakaways are installed on Class I liquid hose?	☐	☐	☐	☐	☐	☐	☐	☐	☐
54. Vent pipes for Class I products terminate 12 feet above grade?	☐	☐	☐	☐	☐	☐	☐	☐	☐
55. Vent pipes for Class II products terminate at a minimum 4 feet above grade and higher than the fill pipe opening?	☐	☐	☐	☐	☐	☐	☐	☐	☐
56. Dispensers are mounted and bolted down properly?	☐	☐	☐	☐	☐	☐	☐	☐	☐
57. Tank deflection measurements for FRP tanks have been re-measured at this point and remain within the acceptable limits of the manufacturer's specifications?	☐	☐	☐	☐	☐	☐	☐	☐	☐
58. Leak detection monitoring systems are operational and appropriate for the site? Note: if this is a high throughput facility, such as truck stop, make sure the leak detection system is evaluated and appropriate for the monthly maximum volume of throughput.	☐	☐	☐	☐	☐	☐	☐	☐	☐
59. Unattended fueling—ELLD capable of positive shut down of STP when a leak is detected (for pressurized delivery)	☐	☐	☐	☐	☐	☐	☐	☐	☐
60. Installation inspection was photographed?	☐	☐	☐	☐	☐	☐	☐	☐	☐
61. Installation inspection was videotaped?	☐	☐	☐	☐	☐	☐	☐	☐	☐
62. Manufacturer's Checklist is completed and signed by installer?	☐	☐	☐	☐	☐	☐	☐	☐	☐

Installation Inspector's Name (Print): _____ **3rd Inspection Date:** _____

Installation Inspector's Signature: _____

Check the category below for the gasoline dispensing facility (GDF) you are installing and make sure the appropriate equipment is installed according to the expected or measured monthly throughput.

National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements for Source Categories *(check all that apply)*			
Select one of the three source categories:	**YES**	**NO**	**NA**
1. Facility's estimated monthly throughput for gasoline is less than 10,000 gallons			
2. Facility's estimated monthly throughput for gasoline is 10,000 gallons or more, but less than 100,000 gallons			
a. Drop tube installed within 6 inches of tank bottom for submerged filling			
b. Vent pipes ≥12 feet above grade			
3. Facility's estimated monthly throughput for gasoline is 100,000 gallons or more			
a. Dual Point vapor balance system installed with spill buckets and swivel adaptors OR			
b. Single point (coaxial) vapor control system installed with spill bucket and swivel adaptor			
c. Manifolded vapor recovery system (single vapor hose) installed			
d. Drop tube installed within 6 inches of tank bottom for submerged filling			
e. Vapor-tight caps installed for liquid fill connections			
f. Vent pipes ≥12 feet above grade			
g. Pressure/vacuum vent valves installed on each vent pipe at specified setting OR			
h. Pressure/vacuum vent valves present on manifolded vent pipes at specified setting			
i. Pressure/vacuum vent valves tested and passed			
j. Static pressure test (decay) performed on vapor balance system and passes			
k. Stage 1 Vapor System is vapor tight			
If this is an installation inspection for a retrofit (on a new or existing UST system), complete the following:			
UST system was installed before November 9, 2006			
UST system was installed after November 9, 2006			

INSTALLATION INSPECTOR'S COMMENTS

INSTALLATION INSPECTOR'S NAME:

Installation of Vapor Control Equipment
At New and Existing Gasoline Dispensing Facilities
National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 Code of Federal Regulations (CFR) Part 63, Subpart CCCCCC

Gasoline dispensing facilities (GDFs) are now required to control gasoline vapors based on the monthly throughput of the facility (gallons per month or gpm). There are three source categories of GDFs: less than 10,000 gpm (small), equal to or greater than 10,000 gpm (medium) and equal to or greater than 100,000 gpm (large). Source categories are determined by a 30-day rolling average throughput. If at any point throughput exceeds medium or large source categories, GDFs must comply with the requirements for those categories. It is incumbent upon Iowa-licensed Installers and installation inspectors to help their clients understand the NESHAP requirements as new UST systems are installed and existing systems are retrofitted.

Complete Stage 1 vapor recovery systems are required on all new GDFs (installed after November 9, 2006) that meet or exceed the large GDF category. Dual point systems are required on GDFs installed after January 10, 2008. The deadline for installation of vapor recovery systems for new GDFs is September 23, 2008. That means any large, medium or small source facility built after November 9, 2006 must comply with the specific requirements by September 23, 2008. Any proposed large source GDF must have complete Stage 1 Vapor Recovery system (dual point) ready to go at start up. Existing GDFs (constructed on or before November 9, 2006) that meet or exceed the large source category are required to have Stage 1 vapor recovery by January 10, 2011.

Stage 1 Vapor Recovery returns the gasoline vapors emitted during the transfer of gasoline to the UST back to the transport truck instead of forcing the vapors out through the vent pipe. Gasoline vapors contain benzene and volatile organic compounds (VOCs), which are harmful to the atmosphere and to human health. Depending on the technology that exists at the terminal or bulk plant, vapors captured during product transfer can be processed by condensation, absorption or incineration.

There are three types of Stage 1 Vapor Recovery: dual point, single point (coaxial), and manifolded. Dual point systems consist of two separate tank risers, one for delivery of the product and the other for the release of vapors. Both fill and vapor risers must be fitted with poppeted vapor swivel adaptors. Coaxial or single point systems have only one tank opening with concentric tubing, which allows for delivery through the inner drop tube and vapor recovery through the outer tube. A manifolded vapor control system allows for one vapor hose connection for all the tanks at a facility.

The coaxial vapor control is less expensive when retrofitting existing large source GDFs than installing dual point control, but coaxial transfers of product take longer. Eventually, within just a few years delivery costs can exceed the cost installing a two point system. Further, coaxial controls may not remain vapor and liquid tight over extended periods of use due to repeated torque force on the swivel adaptor. EPA strongly discourages the use of coaxial systems because of these problems.

Pressure vacuum relief vent valves complete the Stage 1 Vapor Recovery System. Vent valves must be installed on vent pipes (manifolded or separate) to prevent gasoline vapors from escaping to the atmosphere and prevent excessive positive or negative pressure in the tank.

Testing Stage 1 Vapor Recovery Systems:
The pressure decay test is a low-pressure testing method that tests the entire Stage 1 vapor control system, including the tank risers, the tank, piping, vent lines and pressure/vacuum vent valves. Testing is conducted after backfilling or just before the vapor control system is put into operation. Test equipment must be third party evaluated. Testing is required on start up and every three years on Stage 1 vapor control systems. Owners and operators must maintain initial test results and every three year pressure test results. Records must be maintained for five years.

See PEI's Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle-Fueling Sites (PEI RP 300) for more installation and testing information. To view the options available to GDFs in summary form go to http://www.epa.gov/ttn/atw/area/gdfb.pdf. To view the federal final rule for bulk terminals, bulk plants and GDFs go to http://www.epa.gov/ttn/atw/area/fr10ja08.pdf. To view Iowa DNR's proposed Air Quality rule revisions go to http://www.iowadnr.gov/epc/08aug/18.pdf. Contact Diane Brockshus (515.281.4801, e-mail: diane.brockshus@dnr.iowa.gov with DNR's Air Quality Bureau for more information about NESHAP compliance.